Claims

1. A device useful in the photo-oxidation of a sample liquid and in the measurement of the oxidized carbon content thereof, the device comprising:

a cell comprising a rigid light-transmissive outer wall enclosing a continuous predetermined internal volume, the transmissivity of the rigid outer wall being sufficient to allow the passage therethrough of photo-irradiation of an intensity sufficient for effecting said photo-oxidation of said sample liquid when said sample liquid is loaded into said continuous predetermined internal volume;

at least two elongate probes penetrating through said rigid outer wall and extending substantially into said continuous predetermined internal volume, the probes collectively capable of measuring the temperature and the conductivity of said sample liquid, at least one of the elongate probes being hollow at least partially along its length; and

a temperature sensitive element, capable of providing a temperature-dependent electrical signal, positioned inside one of said hollow elongate probes.

2. The device of claim 1, wherein the device comprises a total of two of said elongate probes, the elongate probes configured as paired electrodes that function together for said measurement of said conductivity.

3. The device of claim 1, wherein the device comprises:

a pair of said elongate probes configured as paired electrodes that function together for said measurement of said conductivity; and

a third elongate probe positioned substantially between said pair of said elongate probes, the third elongate probe being hollow at least partially along its length, said temperature sensitive element being positioned inside said third elongate probe.

4. The device of claim **1**, wherein said cell further comprises an inlet and an outlet, said inlet configured for loading sample liquid into said continuous predetermined internal volume, said outlet configured for removing sample liquid loaded into said continuous predetermined internal volume.

5. The device of claim **1**, wherein said rigid outer wall is at least partially made of fused quartz.

6. A method for measuring the total oxidizable carbon content of a liquid, the method including the steps of:

a) providing a device comprising a cell, at least two elongate probes, and a temperature sensitive element, wherein said cell comprises a rigid light-transmissive outer wall enclosing a continuous predetermined internal volume, wherein said at least two elongate probes penetrate through said rigid outer wall and extend substantially into said internal volume, the probes collectively capable of measuring the temperature and the conductivity of said sample liquid, at least one of the elongate probes being hollow at least partially along its length, and wherein said temperature sensitive element is capable of providing a temperature-dependent electrical signal and is positioned inside one of said hollow elongate probes;

b) loading a sample of said liquid into said internal volume, measuring the temperature and conductivity of said sample, then calculating a first thermally-corrected conductivity value for said sample using its measured temperature and its measured conductivity;

c) exposing either said sample or a second sample of said liquid loaded into said internal volume to photo-irradiation through said rigid light-transmissive outer wall at an intensity and duration sufficient to effect at least partial photo-oxidation of any carbon species contained in the loaded sample, measuring the temperature and conductivity of said loaded sample at the conclusion of said exposure, then calculating a

second thermally-corrected conductivity value for said loaded sample using its measured temperature and its measured conductivity; and

d) calculating the total oxidizable carbon content of said liquid using said first and second thermally-corrected conductivity values.

7. The method of claim **6**, wherein the device comprises:

a pair of said elongate probes configured as paired electrodes that function together for said measurement of said conductivity; and

a third probe positioned in said internal volume substantially between said pair of said elongate probes, the third probe being hollow at least partially along its length, said temperature sensitive element being positioned inside said third probe.

8. The method of claim **6**, wherein the device comprises:

a total of two of said elongate probes, the probes configured as paired electrodes that function together for said measurement of said conductivity.

9. The method of claim **6**, wherein the photo-irradiation in steps (b) and (d) is ultraviolet photo-irradiation.

10. The method of claim **6**, wherein said liquid is water.